PATENT
Attorney Docket No.: WCMI-0028

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3616

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of:	Thomas N. Chalin and Donald R. Watson
Serial No.:	10/061,774
Filed:	February 1, 2002
Entitled:	SUSPENSION SYSTEM HAVING REDUCED STRESS AXLE CONNECTION
Group Art Unit:	3616
Examiner:	E. Culbreth

APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Appellant hereby timely submits this Appeal Brief under the provisions of 37 CFR §41.37 and respectfully requests consideration thereof before the Board of Patent Appeals and Interferences. Appellant's Notice of Appeal was filed on February 3, 2005, appealing to the Board from the decision of the examiner, mailed January 19, 2005, finally rejecting certain claims of the above-identified patent application.

A credit card payment form in the amount of $250.00 is enclosed herewith in payment of the fee specified in 37 CFR §41.20(b)(2).

REAL PARTY IN INTEREST

The real party in interest is the assignee of the present application, Watson & Chalin Manufacturing, Inc. of McKinney, Texas.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences known to appellants, the appellants' legal representatives or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

STATUS OF CLAIMS

Claims 1-75 were originally filed in the present application. Claims 11-13, 39, 56-58 and 69 were withdrawn from consideration pursuant to a requirement for election of species, but remain pending in the application and are allowed. Claims 6, 8, 40, 46, 51 and 52 were canceled by an Amendment filed October 28, 2004. Claims 1-5, 7, 9-39, 41-45, 47-50 and 53-75 are pending in the application.

Claims 5 and 50 are rejected.

Claims 1-4, 7, 9-39, 41-45, 47-49 and 53-75 are allowed.

Claims 6, 8, 40, 46, 51 and 52 are canceled.

Claims 5 and 50 are being appealed.

STATUS OF AMENDMENTS

An Amendment was filed on April 6, 2004 in response to an Office Action dated January 7, 2004. The Amendment was entered and considered by the examiner as evidenced in paragraph 1 of the Office Action dated July 28, 2004.

An Amendment was filed on October 28, 2004 in response to the July 28, 2004 Office Action. This Amendment was entered and considered by the examiner as evidenced in paragraph 1 of the Office Action dated January 19, 2005.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention advances the art of constructing suspension systems for wheeled vehicles, so that axle connections in suspension systems experience reduced stress. In this manner, the axle connections are made more reliable in service and less prone to stress-induced failure. To accomplish these objectives, a suspension system 10 is described in the specification in which a sleeve 32 is clamped about an axle 12, thereby removing any clearance between the axle and sleeve, and the sleeve is welded to the axle in a low stress area of the axle (see FIGS. 1). Removing clearance between the sleeve 32 and the axle 12, and welding in a low stress area of the axle, reduces stress-induced failure of the weld therebetween (for example, by increasing the fatigue strength of the welded connection). The sleeve 32 is welded to a pivot arm 14 of the suspension system 10 (see FIG. 6).

In one aspect of the invention recited in independent claim 5, the sleeve 32 is clamped on the axle 12 in a clamped position without press-fitting. Some benefits of this procedure are described at page 7, lines 10-19 of the specification. The sleeve 32 is welded to the axle 12 in the clamped position through at least one opening 40 formed laterally through the sleeve. An arm 14 is attached to the axle 12 by welding the arm directly to the sleeve 32.

In another aspect of the invention recited in independent claim 50, the sleeve 32 includes a clamp portion 36 which is used to clamp the sleeve on the axle 12. The sleeve 32 is itself welded in the clamped position prior to the sleeve being welded to the axle 12. The sleeve 32 is welded to the axle 12 in an opening 40 formed laterally through the sleeve, and the arm 14 is welded to the sleeve.

Various configurations of the openings 40 in which the sleeve 32 is welded to the axle 12 are depicted in FIGS. 1-4 and 11-13.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 5 and 50 stand rejected under 35 USC §102(e) as being anticipated by U.S. Patent No. 6,491,314 to Smith, et al. (referred to in the arguments below as Smith).

ARGUMENT

Rejections under 35 USC §102(e) over Smith

Claims 5 and 50

Claims 5 and 50 each recite a feature of the invention wherein a sleeve is clamped on an axle. With the sleeve in this clamped position, the sleeve is welded to the axle. In addition, the sleeve is welded to the axle in at least one opening formed laterally through the sleeve.

In the January 19, 2005 Office Action, the examiner equates the recited sleeve with the U-shaped plates 362, 366 described by Smith. The examiner further states that, "The sleeve in Figure 39 is welded to the axle in at least one opening formed laterally through the sleeve (column 18, lines 42-46)." See paragraph 2 of the January 19, 2005 Office Action.

It simply is not true that Smith describes the plates 362, 366 welded to the axle in any opening formed laterally through the plates. The passage in Smith referred to by the examiner (column 18, lines 42-46) reads as follows:

> The U-shaped plates 362 and 366 are welded together in compression around the axle 90 in the manner described above with respect to FIG. 30 before welding the plates 362 and 366 to the axle 90.

Note that this passage describes the plates being welded to each other and to the axle, but it does not describe the plates being welded to the axle in an opening formed laterally through the plates. The passage does refer to welding the plates together in compression around the axle, "in the manner described above with respect to FIG. 30," but does not describe at all how the plates are welded to the axle.

The examiner seems to infer that the weld beads 370 used by Smith to join the plates 362, 366 to each other are also used to weld the plates to the axle. If this were so, then it would make no sense for the passage above to describe welding the plates to each other before welding the plates to the axle. The only way the passage above makes sense is if the plates are welded to each other first, and then the plates are welded to the axle.

Further support for the reasoning that the weld beads 370 do not weld the plates to the axle is found in the description of the embodiment illustrated in FIG. 30. Recall that the passage referred to by the examiner states that the plates 362, 366 are welded together, "in the manner described above with respect to FIG. 30." The welding together of the plates 362, 366 in the FIG. 30 embodiment is described at column 15, lines 11-45.

In the interest of brevity, the entire description of the welding procedure in the FIG. 30 embodiment will not be reproduced here. However, it should be noted that the described welding procedure does include the following:

> The wrapper band of this embodiment functions essentially the same as the wrapper bands [the plates 362, 366] shown in the previous embodiments to compress and retain the axle in a relatively fixed relationship with respect to the wrapper band during normal service of the axle on a suspension system without welding of the axle bracket or wrapper band to the axle. The invention contemplates the development of frictional forces between the wrapper bands and the axles sufficient to fix the axles to the wrapper bands and to the suspension arms without welding on the axle. (underlining and bracketed text added)

Thus, it is clear that the welding procedure in the FIG. 30 embodiment describes the plates 362, 366 being welded to each other without also welding to the axle. There can be no other reasonable conclusion.

So how are the plates 362, 366 welded to the axle in the passage referred to by the examiner in the Office Action? It is unclear. Perhaps the plates 362, 366 are welded to the axle at their outside edges.

However, the test of anticipation is not whether an examiner can conceive of a way of modifying a reference to include the features recited in a claim. Instead, the test is whether the reference actually describes all of the limitations recited in the claim. In the present case, the reference clearly does not describe all of the limitations recited in claims 5 and 50, and so the Board is respectfully requested to direct the examiner to withdraw the rejections of these claims.

Respectfully submitted,
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Dated: Mar. 31, 2005

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I hereby certify that this correspondence and the documents referred to as attached therein are being deposited with the United States Postal Service in an envelope as "Express Mail Post Office to Addressee" service under 37 CFR 1.10 addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450,

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on APRIL 1, 2005

CLAIMS APPENDIX

1. A vehicle suspension system, comprising:

an axle;

a sleeve clamped on the axle in a clamped position without press-fitting, the sleeve being welded in the clamped position; and

an arm attached to the axle by welding directly to the sleeve, the sleeve being welded to the arm at openings formed through opposing side walls of the arm, and the openings in the side walls extending less than 360 degrees about the sleeve.

2. A vehicle suspension system, comprising:

an axle;

a sleeve clamped on the axle in a clamped position without press-fitting, the sleeve being welded in the clamped position; and

an arm attached to the axle by welding directly to the sleeve, the arm including a generally U-shaped portion having opposing side walls, and a plate extending between the side walls and welded to each of the side walls, the plate further being welded to the sleeve.

3. The suspension system according to Claim 2, wherein the sleeve includes a generally radially outwardly extending clamp portion, and wherein the plate is welded to the clamp portion.

4. A vehicle suspension system, comprising:

an axle;

a sleeve clamped on the axle in a clamped position without press-fitting, the sleeve being welded in the clamped position; and

an arm attached to the axle by welding directly to the sleeve, the sleeve being welded in its clamped position by a weld extending between structural members of a generally radially outwardly extending clamp portion of the sleeve.

5. A vehicle suspension system, comprising:

an axle;

a sleeve clamped on the axle in a clamped position without press-fitting, the sleeve being welded in the clamped position; and

an arm attached to the axle by welding directly to the sleeve, the sleeve being welded to the axle in at least one opening formed laterally through the sleeve.

7. A vehicle suspension system, comprising:

an axle;

a sleeve clamped on the axle in a clamped position without press-fitting, the sleeve being welded in the clamped position; and

an arm attached to the axle by welding directly to the sleeve, the sleeve being welded to the arm at openings formed through opposing side walls of the arm, and the side walls being welded to the sleeve less than 360 degrees about the sleeve.

9. The suspension system according to Claim 1, wherein each of the side walls includes a void extending between the respective side wall opening and a peripheral edge of the side wall, and wherein a clamp portion of the sleeve is received in each of the voids.

10. The suspension system according to Claim 9, wherein the arm includes at least one plate welded to and extending between each of the side walls, wherein the

clamp portion extends outwardly from the void in each side wall, and wherein the plate is welded to the clamp portion extending outwardly from the void in each side wall.

11. The suspension system according to Claim 1, further comprising a shock absorber attached to the sleeve.

12. The suspension system according to Claim 11, wherein the shock absorber is attached to the sleeve via a bracket welded directly to the sleeve.

13. The suspension system according to Claim 11, wherein the bracket is welded to the sleeve without also being welded to the arm.

14. The suspension system according to Claim 1, wherein the sleeve extends greater than 180 degrees about the axle.

15. A vehicle suspension system, comprising:

an axle;

a sleeve clamped to the axle without press-fitting; and

an arm having opposing side walls, each of the side walls having an opening formed therethrough, the sleeve being received in each of the openings, and the sleeve being welded to the arm less than 360 degrees about a periphery of each of the openings.

16. The suspension system according to Claim 15, wherein the sleeve is clamped to the axle in a manner producing a compressive stress between the sleeve and the axle.

17. The suspension system according to Claim 16, further comprising at least one fastener in a clamp portion of the sleeve, the compressive stress being produced when the fastener is tightened.

18. The suspension system according to Claim 17, wherein the clamp portion extends in a void formed in each of the side walls between the respective opening and a peripheral edge of the side wall.

19. The suspension system according to Claim 18, wherein the arm further includes at least one plate attached to and extending between the side walls, the plate being welded to the sleeve.

20. The suspension system according to Claim 19, wherein the plate is welded to the clamp portion of the sleeve.

21. The suspension system according to Claim 20, wherein the clamp portion extends outwardly from the void in each side wall, and wherein the plate is welded to the clamp portion extending outwardly from the void in each side wall.

22. The suspension system according to Claim 15, wherein the sleeve extends greater than 180 degrees about the axle.

23. A method of fabricating a vehicle suspension system, the method comprising the steps of:

clamping a sleeve to an axle without press-fitting;

welding the sleeve, thereby retaining the sleeve in its clamped position; and

welding the sleeve to each of opposing side walls of an arm, the sleeve being welded less than 360 degrees about an opening formed through each of the side walls.

24. The method according to Claim 23, wherein the step of welding the sleeve in its clamped position further comprises welding together members of a clamp portion of the sleeve.

25. The method according to Claim 24, further comprising the step of welding the clamp portion to at least one plate of the arm extending between and attached to each of the side walls.

26. The method according to Claim 25, further comprising the step of welding the plate to the side walls after the step of welding the sleeve to the side walls.

27. The method according to Claim 25, further comprising the step of welding the plate to the side walls prior to the step of welding the sleeve to the side walls.

28. The method according to Claim 23, wherein the clamping step further comprises tightening at least one fastener in a clamp portion of the sleeve.

29. The method according to Claim 28, further comprising the step of removing the fastener from the clamp portion after the step of welding the sleeve in its clamped position and prior to the step of welding the sleeve to the side walls.

30. The method according to Claim 23, wherein in the clamping step, the sleeve extends greater than 180 degrees about the axle.

31. A method of fabricating a vehicle suspension system, the method comprising the steps of:

clamping a sleeve to an axle without press-fitting, thereby removing clearance between the sleeve and axle, and applying a compressive stress between the sleeve and axle;

welding the sleeve to the axle;

welding opposing side walls of an arm to the sleeve; and

welding a plate to the sleeve, the plate extending between the side walls.

32. The method according to Claim 31, further comprising the step of retaining the compressive stress between the sleeve and axle by welding together members of the sleeve.

33. The method according to Claim 32, wherein in the retaining step the sleeve members are included in a clamp portion of the sleeve.

34. A method of fabricating a vehicle suspension system, the method comprising the steps of:

clamping a sleeve to an axle without press-fitting, thereby removing clearance between the sleeve and axle, and applying a compressive stress between the sleeve and axle;

retaining the compressive stress between the sleeve and axle by welding together members of the sleeve, the sleeve members being included in a clamp portion of the sleeve;

welding the sleeve to the axle; and

welding opposing side walls of an arm to the sleeve,

wherein the clamping step further comprises tightening a fastener in the members of the clamp portion.

35. The method according to Claim 33, wherein the step of welding the side walls to the sleeve further comprises welding the side walls to the clamp portion of the sleeve.

36. The method according to Claim 33, wherein in the step of welding the side walls to the sleeve, the clamp portion is positioned at least partially between the side walls.

37. A method of fabricating a vehicle suspension system, the method comprising the steps of:

clamping a sleeve to an axle without press-fitting, thereby removing clearance between the sleeve and axle, and applying a compressive stress between the sleeve and axle;

retaining the compressive stress between the sleeve and axle by welding together members of the sleeve, the sleeve members being included in a clamp portion of the sleeve;

welding the sleeve to the axle; and

welding opposing side walls of an arm to the sleeve, the clamp portion extending in a void formed between a respective opening and a peripheral edge of each side wall.

38. The method according to Claim 37, wherein in the step of welding the side walls to the sleeve, the clamp portion extends outwardly beyond the side wall peripheral edges.

39. The method according to Claim 31, further comprising the step of welding a shock absorber mounting bracket to the sleeve, without welding the mounting bracket to the arm.

41. The method according to Claim 31 , wherein the step of welding the plate to the sleeve further comprises welding the plate to a clamp portion of the sleeve.

42. The method according to Claim 31 , further comprising the step of welding the plate to each of the side walls prior to the step of welding the plate to the sleeve.

43. The method according to Claim 31 , further comprising the step of welding the plate to each of the side walls after the step of welding the plate to the sleeve.

44. The method according to Claim 31, wherein in the clamping step, the sleeve extends greater than 180 degrees about the axle.

45. A vehicle suspension system, comprising:

an axle;

a sleeve clamped in a clamped position on the axle by a clamp portion of the sleeve, the sleeve being welded in the clamped position prior to the sleeve being welded to the axle; and

an arm attached to the axle by welding to the sleeve, the sleeve being welded to the arm at openings formed through opposing side walls of the arm, and the side walls being welded to the sleeve less than 360 degrees about the sleeve.

47. A vehicle suspension system, comprising:

an axle;

a sleeve clamped in a clamped position on the axle by a clamp portion of the sleeve, the sleeve being welded in the clamped position prior to the sleeve being welded to the axle; and

an arm attached to the axle by welding to the sleeve, the arm including a generally U-shaped portion having opposing side walls, and a plate extending between the side walls and welded to each of the side walls, the plate further being welded to the sleeve.

48. The suspension system according to Claim 47, wherein the plate is welded to the clamp portion of the sleeve.

49. The suspension system according to Claim 45, wherein the sleeve is welded in its clamped position by a weld extending between structural members of the clamp portion of the sleeve.

50. A vehicle suspension system, comprising:

an axle;

a sleeve clamped in a clamped position on the axle by a clamp portion of the sleeve, the sleeve being welded in the clamped position prior to the sleeve being welded to the axle, and the sleeve being welded to the axle in at least one opening formed laterally through the sleeve; and

an arm attached to the axle by welding to the sleeve.

53. A vehicle suspension system, comprising:

an axle;

a sleeve clamped in a clamped position on the axle by a clamp portion of the sleeve, the sleeve being welded in the clamped position prior to the sleeve being welded to the axle; and

an arm attached to the axle by welding to the sleeve, the sleeve being welded to the arm at openings formed through opposing side walls of the arm, and the openings in the side walls extending less than 360 degrees about the sleeve.

54. The suspension system according to Claim 53, wherein each of the side walls includes a void extending between the respective side wall opening and a peripheral edge of the side wall, and wherein the clamp portion of the sleeve is received in each of the voids.

55. The suspension system according to Claim 54, wherein the arm includes at least one plate welded to and extending between each of the side walls, and wherein the plate is welded to the clamp portion extending outwardly from the void in each side wall.

56. The suspension system according to Claim 45, further comprising a shock absorber attached to the sleeve.

57. The suspension system according to Claim 56, wherein the shock absorber is attached to the sleeve via a bracket welded directly to the sleeve.

58. The suspension system according to Claim 56, wherein the bracket is welded to the sleeve without also being welded to the arm.

59. The suspension system according to Claim 45, wherein the sleeve extends greater than 180 degrees about the axle.

60. A method of fabricating a vehicle suspension system, the method comprising the steps of:

clamping a sleeve to an axle, thereby removing clearance between the sleeve and axle, and applying a compressive stress between the sleeve and axle;

then welding the sleeve to the axle; and

then welding opposing side walls of an arm to the sleeve.

61. The method according to Claim 60, further comprising the step of retaining the compressive stress between the sleeve and axle by welding together members of the sleeve.

62. The method according to Claim 61, wherein the step of retaining the compressive stress is performed prior to the step of welding the sleeve to the axle.

63. The method according to Claim 61, wherein in the step of retaining the compressive stress between the sleeve and axle, the members of the sleeve are included in a clamp portion of the sleeve.

64. The method according to Claim 63, wherein the clamping step further comprises tightening a fastener in the members of the clamp portion.

65. The method according to Claim 63, wherein the step of welding the side walls to the sleeve further comprises welding the side walls to the clamp portion of the sleeve.

66. The method according to Claim 63, wherein in the step of welding the side walls to the sleeve, the clamp portion is positioned at least partially between the side walls.

67. The method according to Claim 63, wherein in the step of welding the side walls to the sleeve, the clamp portion extends in a void formed between a respective opening and a peripheral edge of each side wall.

68. The method according to Claim 67, wherein in the step of welding the side walls to the sleeve, the clamp portion extends outwardly beyond the side wall peripheral edges.

69. The method according to Claim 60, further comprising the step of welding a shock absorber mounting bracket to the sleeve, without welding the mounting bracket to the arm.

70. The method according to Claim 60, further comprising the step of welding a plate to the sleeve, the plate extending between the side walls.

71. The method according to Claim 70 wherein the step of welding the plate to the sleeve further comprises welding the plate to a clamp portion of the sleeve.

72. The method according to Claim 70, further comprising the step of welding the plate to each of the side walls prior to the step of welding the plate to the sleeve.

73. The method according to Claim 70, further comprising the step of welding the plate to each of the side walls after the step of welding the plate to the sleeve.

74. The method according to Claim 60, wherein in the clamping step, the sleeve extends greater than 180 degrees about the axle.

75. The method according to Claim 60, wherein the step of clamping the sleeve to the axle is performed without press-fitting the sleeve onto the axle.